Science Update

Feeding Soil Microorganisms To Reduce a Water Pollutant

Conservation tillage can cut the risk that atrazine, a popular weed killer, will reach groundwater. This tillage approach leaves some or all of the previous crop's stubble on the surface. As the stubble decays, organic matter builds in the top soil layer. Beneficial microbes that thrive in the carbon-enriched topsoil can break down atrazine before it leaches into groundwater. Agricultural Research Service scientists based in South Carolina came up with the finding when they examined how various tillage practices affect atrazine's fate in Iowa glacial till soils and South Carolina sandy coastal soils. The research could lead to more environmentally friendly farming practices. ARS scientists also study herbicide leaching and runoff at other locations including Beltsville, Maryland; Tifton, Georgia; Ames, Iowa; Morris, Minnesota; and Stoneville, Mississippi.

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Some Texas Wheats Don't Bow to Hessian Flies

Two top wheat breeding lines for Texas resist the Hessian fly. One line has two bonuses: high yield and resistance to leaf rust. Discovery of the fly resistance by Agricultural Research Service scientists is timely because the Hessian fly was first found in west-central Texas in 1997. Long a notorious pest in the central plains, it entered the United States in the 18th century. If the resistant lines continue yielding well and have other desirable traits, growers may get new commercial varieties within 5 years. Until then, they can consider available varieties such as 2180, 2163,

2165, 2157, and Pecos. These resist the fly in west-central Texas and in Kansas. But growers need to weigh their other traits, such as disease resistance and yield potential. In Texas in 1997, Hessian flies damaged 95 percent of the 48,000 acres of wheat in McCulloch County alone, with a \$2.45 million loss in yield, according to estimates from a Texas A&M Agricultural Extension Service agent. Chemical treatment is expensive, so resistant wheat varieties have traditionally formed the main defense against the insect.

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Hessian fly, Mayetiola destructor.

Computer Program Helps the Bee Business Keep Buzzing Along

Beekeepers can turn to their PCs to manage the business more profitably. BK-ECONOMICS ("BK" stands for beekeeping), a free computer program available from Agricultural Research Service scientists, includes a spreadsheet to track loans and equipment, labor, vehicle, and insurance expenditures. Plus, it has a database component to help beekeepers market honey. The database holds 49 years of state-by-state honey values and average production from individual bee colonies. This can help beginners determine how much honey—and money—they can expect. For example, beekeepers in Georgia can

expect an average of 50 pounds per year per colony; in California, 90 pounds. A colony is two or more typical white boxes or hives, each containing nine frames of honeycomb. The program also helps beekeepers locate apiculture specialists, calculate loan terms, and simulate business expansion. This can help beginning apiarists decide whether to buy or lease new equipment or to make do until later. BK-ECONOMICS runs on IBM-compatible and MacIntosh computers and is available through the researchers on 3-1/2-inch floppy disks.

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C Supplements Deter Cataracts

New findings confirm that longterm use of vitamin C supplements reduces the risk of cataracts. Seventyseven percent fewer early-stage cataracts appeared in women who took the supplements daily for more than 10 years, compared to those who didn't. Cataracts—a clouding of the eye's lens—are believed to result from oxidation of proteins within the lens. Vitamin C prevents oxidation. The study of 247 women was conducted by scientists at an Agricultural Research Service-funded research center in Boston, in collaboration with the Harvard University Nurses Health Study. Supplement users took at least 500 milligrams of vitamin C daily, in addition to food and multivitamin sources. The findings corroborate a 1992 report linking 10-plus years of the supplements with far fewer cataract surgeries among nurses in the Harvard study.

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